PRE-HOSPITAL AND EMERGENCY SERVICES STUDY

PRINCE EDWARD ISLAND
HOSPITAL AND HEALTH SERVICES COMMISSION
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The Prince Edward Island Hospital and Health Services Commission recognizes and appreciates the contribution of those who participated in this study. Special thanks is extended to Dr. David MacKenzie who acted as Medical Advisor during the process.

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EXECUTIVE SUMMARY

Pre-hospital care is a relatively new concept which refers to the delivery of emergency health services at the time of illness or accident which traditionally were unavailable until arrival at a hospital.

Emergency Medical Services (EMS) is a systems approach to the components of pre-hospital care which provides direct and expedient delivery of health care services under emergency conditions. A systems approach to pre-hospital care delivery will facilitate a reduction in expensive duplication of services by coordinating the efforts of existing services and agencies presently operating throughout Prince Edward island.

In some areas of the Province, pre-hospital care has reached a peak in its development within the existing structure. The initiation of a system to guide the development of emergency health services could result in renewed growth and further improvements in the delivery of health care under emergency conditions. Much can be learned from other Provinces where programs were developed which were very expensive, difficult to control and evaluate, and of questionable benefit. A structure which provides components for planning, coordination, and evaluation are essential to the maintenance of control and the containment of costs related to the development of emergency medical services.

Many of those interviewed believe that although the existing services are adequate, numerous improvements are possible within the present pre-hospital and emergency system. The concerns expressed included expensive ambulance transportation costs both in and out of the Province, lack of a fair system for all Islanders, lack of public awareness regarding access to emergency services, and the over utilization of emergency departments.

TERMINOLOGY

For the purpose of this report the following terms are used:

Advanced Life Support (ALS):

Basic life support plus invasive techniques leading to definitive treatment to save the patient's life.

Air Ambulance:

The use of a specially outfitted aircraft as the transportation mechanism for moving or transferring patients to or between hospitals.

Basic Life Support (BLS):

Maintenance of the ABC's (airway, breathing, and circulation) without adjunctive equipment.

Commission:

P.E.I. Hospital and Health Services Commission.

EMA:

An ambulance attendant trained to provide Basic Life Support (BLS) Services during the transportation of persons to appropriate Health Care facilities.

EMA-D:

An Emergency Medical Attendant who is trained to perform defibrillation. These attendants are trained under the guidance of a Medical Director.

First Responders:

Persons who are trained in BLS. These individuals are, in some areas, integrated with the BLS Service.

Emergency Medical Services (EMS):

A systems approach for the provision of personnel, facilities, and equipment to effectively coordinate and deliver health care services under emergency conditions.

Inter-Hospital Transfer:

The movement of patients between hospitals for assessment, diagnosis, or treatment when the required services are not available at the patient's original hospital location.

Medevac:

An air ambulance medical evacuation of a patient.

1. INTRODUCTION

The Prince Edward Island Hospital and Health Services Commission has clearly identified an on-going commitment to provide a continuum of care for P.E.I. as outlined in the "New Directions for Management of the Health Care System".[1] As part of this endeavor, the Commission has responded to a request by the Emergency Cardiac Care Committee of the Canadian Heart and Stroke Foundation and to recommendations from the "Out-of-Province Project Report"[2] for a study to review pre-hospital and emergency services on Prince Edward Island.

In July 1989, the Pre-hospital and Emergency Services Study was initiated to examine the present status of pre-hospital and emergency services on P.E.I. This study included a comprehensive review of ambulance and other related services and focused on the exploration of various options for the future related to identified issues and concerns.

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1. Hospital and Health Services Commission, New Directions for Management of the Health Care System, July, 1987

2. Hospital and Health Services Commission, Out-of-Province Liaison Project Report, March, 1989

1.1 Terms of Reference for the Pre-hospital and Emergency Services Study

1. To review the present status of pre-hospital and emergency services on Prince Edward Island including a comprehensive review of ambulance and other related services.

2. To identify current and potential issues and concerns specific to pre-hospital and emergency services.

3. To explore various options for the future relative to identified issues and concerns.

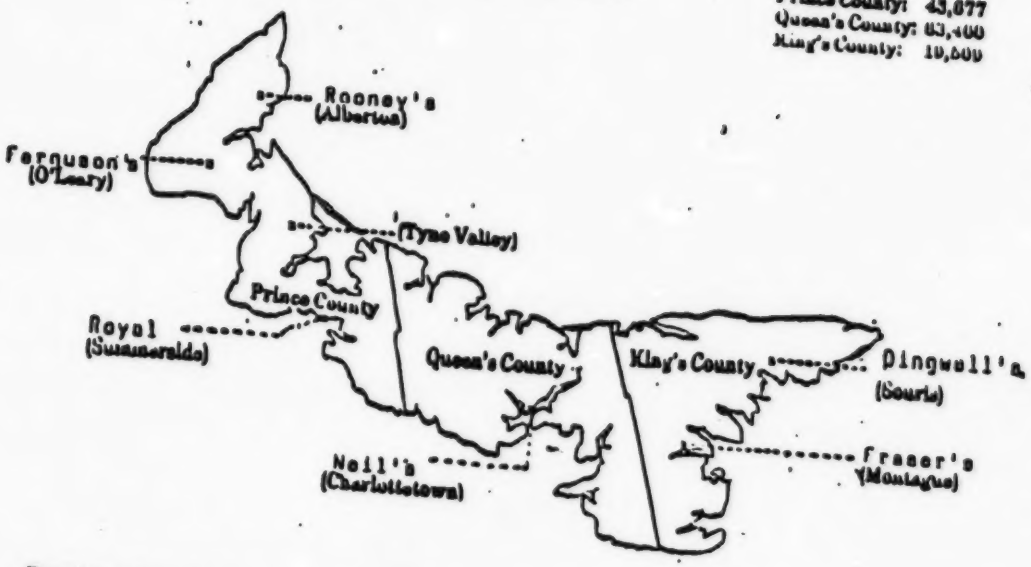
4. To present a report with proposed recommendations regarding pre-hospital and emergency services for Prince Edward Island to the P.E.I. Hospital and Health Services Commission.

1.2 Methodology

Data collection methods used throughout this study included: (1) personal interviews, (2) questionnaires, (3) telephone surveys, and (4) perusal of existing data within the Commission. Informal interviews were carried out with a broad representation from the health care sector on Prince Edward Island (See Appendix A). Structured questionnaires were administered to Emergency Department personnel which included both nurses and physicians (See Appendix B). Telephone surveys were conducted, involving three core groups: (1) Emergency Department Users (See Appendix C) (2) Ambulance Service Users (See Appendix D) and (3) Random General Public (See Appendix E).

TABLE 1

AMBULANCE SERVICES
Geographic Locations of P.E.I.



Population Source: Statistics Canada - 1986 Census Data

2. AMBULANCE SERVICES

2.1 Overview

Emergency Medical Services (EMS) initially developed during the 1960's when the older "load and go" methods began to be replaced with professional-level care at the scene and efficient transportation to the hospital. Present day emergency medical services have extended a much-needed professional arm of the hospital emergency rooms to tne pre-hospital setting where otherwise lost lives are being saved.

Throughout this study there was consensus among those interviewed that an effective ambulance service which provides reliable, and easily accessible transportation is essential to the delivery of pre-hospital care. At present, Prince Edward Island has a total of fifteen (15) ambulances operated by six (6) privately owned companies. In total they average approximately 6,752 trips or 324,185 kilometers per year. A map presented in Table 1 shows the location of these ambulance companies within the Province.

Regulations encompassing ambulance services, specified under the Public Health Act of Prince Edward Island, were introduced in 1972. Since this time, the Regulations have been amended several times to provide for on-going development, with the latest amendment in 1986. The P.E.I. Hospital and Health Services Commission was mandated the responsibility for the administration and operation of the Ambulance Subsidization Program. The Commission administers this program in cooperation with the P.E.I. Ambulance Association in which ambulance personnel, vehicles, and equipment are licensed and the amount of subsidization is negotiated. At present, ambulances licensed under these regulations are being subsidized for the fiscal year

1989-90 at the rate of .80c per kilometer and $67.00 per trip (maximum of two patients per trip) and the operators are authorized to collect a maximum userfee of $90.00. The ambulance operators also receive a grant of $6,145.00 per ambulance per year. In addition, $8,000.00 per year is provided through an Educational Fund to assist licensed ambulance personnel to participate in continuing education.

The numbers of ambulances and personnel licensed for the fiscal year 1989-90 are as follows:

	Location	Personnel	Ambulances
Dingwell's	Souris	6	1
Ferguson's	O'Leary	11	2
Fraser's	Montague	8	2
Neil's	Charlottetown	21	4
Rooney's	Alberton	12	2
Royal	Summerside	17	4

A number of issues have been identified through discussions with those involved with ambulance services in Prince Edward Island. These issues will be discussed during the course of this report.

2.2 Coordination of Services

There is little evidence of long term planning in the area of ambulance services within the Province. Each ambulance owner has been allowed to operate in isolation within his own jurisdiction. The result is an industry that is fragmented, with little central authority. Many of the ambulance operators who were interviewed do not have a sense of belonging to their "Ambulance Association". Attendance at meetings is generally poor since most operators believe that decisions are being made without consideration to their viewpoint. A more effective structure would permit cooperation and eliminate apathy and discontent. A system to effectively co-ordinate and deliver health care services under emergency conditions would contribute significantly to this component of the health care system.

Dauphinee (1989) has prepared a proposal for the organization of Emergency Medical Services in Nova Scotia. This proposal recommends the development of an EMSS (Emergency Medical Services System) that would provide a framework for the coordination and integration of fifteen components which he deems are essential for the provision of optimal pre-hospital care. These components include:

1. Manpower
2. Training
3. Facilities
4. Critical Care Units
5. Transfer of Patients
6. Transportation
7. Communication
8. Accessibility to care
9. Public Information and Education

10. Consumer Participation
11. Standard Coordinated Record Keeping
12. Public Safety Agencies
13. Disaster Linkage
14. Mutual Aid Agreement
15. Evaluation

Some of these components are effectively in place on P.E.I., while others are not and integration is needed. Dauphinee (1989) proposes that the goals of EMSS should be:

> (1) the provision of appropriate interim medical care in a medical crisis when physician expertise is not immediately available,
>
> (2) to transport the patient-in-need, in a safe and appropriate fashion, to a location where such expertise is available;
>
> (3) integration of hospital-based resources largely through designation of facility capability such that there is a reasonable distribution of resources and personnel according to geographic and demographic requirements; and,
>
> (4) integration of service resources so that the spectrum of critical care is encompassed from pre-hospital care (from the incident) to rehabilitation and integration of the victim back into the community so far as is possible (the resolution) (pp. 7).

Dauphinee (1989) recommends the development of an EMSS body to deal with <u>all</u> matters pertaining to pre-hospital Care.

2.3 Education/Personnel Training

Throughout the course of this study, many participants agreed that all ambulance personnel must receive a consistent level of training and continuing education to ensure a unified approach to the delivery of pre-hospital care.

The training requirements for ambulance attendants on P.E.I. are specified under the Public Health Act (1986). Two licensed personnel must be in attendance on every authorized ambulance call. At least one (1) attendant or attendant-driver must be in possession of a valid Emergency Medical Care Certificate (80-120 hrs., equivalent to EMA) acceptable to both the Commission and the Association. Each attendant or attendant-driver must also hold a valid certificate in Cardiopulmonary Resuscitation at the basic level and an advanced First Aid Certificate, issued by either St. John Ambulance or Canadian Red Cross or an equilivant. Ambulance drivers must hold a valid certificate in Cardiopulmonary Resuscitation at the basic-rescuer level.

At present, most provincial ambulance personnel have received training to the level of EMA but the majority of these were at least 3 years ago. There is no provision for retraining included in the Regulations so none of these have been recertified.

Holland College is the only educational institution on Prince Edward Island that provides training to the level of an EMA. Continuing education has been identified by the College as a priority and a standardized curriculum base (Canadian Medical Assocation Basis for Accreditation) has been developed to provide ambulance personnel with upgrading and retraining as required. For a full complement of training, this program would incorporate

an outreach concept to ensure that personnel in both urban and rural locations have similar access to program components.

The public's expectations regarding the competency levels of ambulance personnel should also be considered. In a recent telephone survey of ambulance users, 73.3% of those surveyed stated that they expect ambulance personnel to have "specialized training" (See Appendix D).

2.4 Level of Service

To determine the level of service requirements for ground transportation in BLS, the adequacy of response time must be assessed. Response time refers to the length of time it requires for an ambulance to reach the scene of an illness or accident upon receiving a call for help. Two distinct periods of time are used to determine the adequacy of response times. The first is the five minute time frame in which cardiopulmonary resuscitation must be initiated on a cardiac arrest patient to prevent irreversible brain damage from occurring. The second is the "Golden Hour" of trauma patients within which definitive care must be established to decrease permanent side effects or death.

The service requirements for ground transportation in BLS, using the standard used by Dauphinee (1987) are as follows:

A five minute response time in urban areas for 95% of calls and a twenty minute response time in rural areas for 95% of calls.

The average response times for the six (6) P.E.I. ambulance companies are documented in Table 1.

TABLE 1

Average Response Times for Emergency Calls

September 1989

	No. of Calls		Response Times	
	URBAN under 10km	RURAL over 10km	URBAN under 10km	RURAL over 10km
Dingwell's	1	2	5 min.	17.5 min.
Ferguson's	1	4	5 min.	22 min.
Fraser's	7	8	8.5 min.	18.7 min.
Neil's	24	20	5.1 min.	13 min.
Rooney's	4	5	8.5 min.	17.2 min.
Royal	7	8	4.7 min.	10.4 min.

It is noted that all response times do not fit within Dauphinee's criteria. There are discrepancies in response times between ambulance companies traveling similar distances under similar conditions. A system to monitor and audit the ambulance responses is not at present in existence.

2.5 In Province Costs/Inter Hospital Transfers

Throughout this study, there was a great deal of concern voiced from all areas of the Province regarding the cost to the user, associated with ambulance usage within the Province. Public concern is evidenced in the results of a recent telephone survey which revealed that 75% of ambulance users believed that the cost per ambulance trip was too expensive (See Appendix D). Many of the rural ambulance operators report difficulty in the collection of in-province userfees, which they believe is due to the fact that it is too much to expect people to pay $90 for a trip of "only a couple of blocks" to the hospital in a small area where everyone knows everyone else. As one owner stated "I can be sure to get the $90 when insurance companies, DVA or Social Services are involved, otherwise, it was easier to collect when the fee was lower." It is estimated that approximately 4-5% of user fees are uncollectable. As mentioned earlier, the amount of the user fees and the subsidization of the ambulances is mutually agreed upon by both the P.E.I. Hospital and Health Services Commission and the P.E.I. Ambulance Association.

An analysis of the Ambulance operator's in-province revenue is detailed in Table 2 from 1980 to the present. It is noted that the user fee to the patient has increased significantly since 1986-7. The subsidization per trip and per kilometer has increased gradually over the same time period.

TABLE 2

Analysis of Increases in Ambulance Operators In Province Revenue.

Year	User Fee/Trip	No. of Trips	No. of Miles	Subs/ Trip	Subs/ Mile	Grant per Ambulance	Actual Budget
1980-81	$31.50	6,178	153,199	$44/call	.66/mile	$3850.00	$426,696
1981-82	$35.00	6,671	166,324	$46/call	.80/mile	$4000.00	$495,940
1982-83	$40.00	6,100	172,000	$53/call	1.10/mile	$4500.00	$575,800
1983-84	$42.00	6,628	191,095	$54/call	1.12/mile	$4590.00	$631,600
1984-85	$43.00	6,896	202,375	$56/call	1.16/mile	$4728.00	$696,022
1985-86	$48.00	6,900	203,000	$58.50	1.16/mile	$5345.00	$728,000
1986-87	$50.00	7,100	206,000	$60.25	1.16/mile	$5505.00	$754,000
1987-88	$75.00	6,794	211,373 (340,099km)	$62.66	1.20/mile	$5725.00	$770,290
1988-89	$85.00	6,752	201,482 (324,185km)	$64.54	1.24/mile (.77 km)	$5960.00	$788.990
1989-90	$90.00			$67.00	1.28/mile (.80 km)	$6145.0	

Prince Edward Island is the only Maritime province which does not have an Inter-Hospital Transfer Program to subsidize all portions of medically necessary inter-hospital ambulance transportation within the province. Under the present system, a transferring hospital will pay the userfee ($90) for an inpatient being transferred within the Province to another hospital for further investigation or treatment, as long as they return to that hospital within 24 hours. Otherwise, the userfee is the responsibility of the patient. A person who is transported by ambulance to one hospital and then requires a transfer to another facility for necessary treatment, is responsible for two separate ambulance trip userfees for a total of $180.00. As one hospital administrator stated "It seems the sickest person pays under the present system. An inpatient being transported for an x-ray does not pay a userfee but an injured person transferred for treatment has to."

The general consensus among health care providers is that when inter-hospital transfers are medically necessary for treatment that is unavailable in the present setting then a fairer system must be developed. As one respondent stated, "It should be fair for all, either everyone or no one pays."

A realistic alternative could be a cost shared user fee between the resident and the Commission. This would ensure client participation, reduce unnecessary usage through this participation, and continue the revenue received from third parties.

The actual cost of ambulance services to the Commission for the period of April 1, 1988 to March 31, 1989 is detailed in Table 3.

TABLE 3

Actual Cost of Ambulance Services to Commission
April 1 - March 31, 1989

Number of Trips	6,752
Cost per Trip	$64.54
	$431,514.44
Number of Kilometers	324,185
Cost per Kilometer	.77
	$249,622.45
Grant per Ambulance (15)	$101,853.84
Total	$782,990.73
	+ $6,000.00 Education fund
	$788,990.73

This actual cost of $788,990.73, when compared with the actual Prince Edward Island population (Statistics Canada, 1986) of 126 642, represents a per capita expenditure of $6.23.

2.6 Out of Province Costs

The number of P.E.I. residents seeking medical attention in other provinces necessitates a review of the cost of these trips. At present, only in-Province ambulance transports are subject to subsidization by the Province. Island residents traveling outside the Province for medical treatment receive a subsidy from the hospital to ferry terminal but are not covered under the provincial program beyond that point. Medevacs are provided as an emergency transport service by the Federal Government's Department of National Defense. The resident is responsible for the cost of the ambulance to and from the medevac site. At present, the cost of a one-way ambulance trip to Halifax is $735 and to Moncton is $488. An overview of the number of out of province trips for the period of August to November, 1989 is outlined in Table 4.

The in-province cost to the airport/CFB represents a Medevac and includes only the ambulance cost to the airport. The cost for out of province returns is estimated by means of the Out-of-Province Liaison Program to be approximately $1000 per trip. This includes the cost of removing seats on an aircraft to accommodate a stretcher or in the case of infants, the incubator and escort staff salaries. These figures represent a four (4) month period. If these figures were extrapolated for a twelve (12) month period, the total cost would be approximately $236,073 annually.

It is noted that these figures do not include trips to other provinces (e.g. Ontario or Quebec) or to the U.S.A.

It is realistic to expect an increase in utilization if such a Provincial Program was to be implemented.

An analysis of out-of-Province data reveals that a significant portion (17%) of out-of-Province costs are presently being recovered through third party revenue (See Table 5).

It is unlikely that this source of revenue could be maintained since third party revenue is usually collectable only after other existing Programs have paid their portion.

Currently, an Out-of-Province Liaison Program which facilitates the return of Island residents from an Out-of-Province hospital to their "home" hospital when their condition warrants is in operation. Only the patient's portion of the transportation cost which is not already covered by another insurance or Social Assistance Program is paid for by the Province under this program.

An estimate of the yearly cost of this Program is outlined in Table 6. This total can be deducted from the estimated annual cost of a Provincial Program since the total includes this subsidization by the province.

TABLE 4

Out of Province Calls

(August - November, 1989, Inclusive)

	August	September	October	November		Total
To Moncton	5	9	7	8		29
From Moncton	3	11	5	9		28
To Halifax	6	7	8	11		32
From Halifax	3	3	5	7		18
To Airport	3	7	8	2		25
From Airport	3	3	4	2		12
TOTAL	28	40	37	39	=	144

The cost of these trips are calculated by the following:

Moncton:	$ 488 x 57	$ 27,816
Halifax:	$ 735 x 50	36,750
Airport:	$ 85 x 25 (in province)	2,125
	$1000* x 12 (out of province)	12,000
		$ 78,691
	Annualization factor	x 3
	Estimate annual cost	$236,073

*includes air transport and ground transport

TABLE 5

PORTION OF OUT-OF-PROVINCE COST PAID BY 3RD PARTY
(AUGUST - NOVEMBER, 1989)

August	September	October	November	Total
$1,058	$5,956	$4,205	$488	$11,707 (four month)
	Annualization factor			X 3
	Estimate annual cost			$35,121 (per year)

Any program that is considered should include:

- The establishment of a system which is fair to each Island resident who requires medical treatment which is unavailable within the Province.

- A prior approval system that is enforced. It is recognized that an emergency situation must be handled differently but it would realistically be possible to receive telephone approval similar to what is presently being carried out for Medevacs.

- A standard maximum user fee, since fees for service impress upon the public that emergency care is costly and provide an additional source of revenue to support the program.

TABLE 6

OUT-OF-PROVINCE COST TO COMMISSION

August	September	October	November	TOTAL	
$4,783	$6,704	$2,469	$4,869	$18,825	
		Annualization factor	x	3	
				$56,475	est. annual cost

Estimated Annual	
Out-of-Province Transportation Cost	$236,073
Current Subsidization	56,475
Estimate annual cost	179,598

2.7 Universal Defibrillation Capability

Although defibrillation by EMA's is a fairly new concept, numerous studies have indicated its effectiveness in a variety of settings. At present, two Island ambulance companies have personnel who are trained in the use of defibrillators: Neil's Ambulance in Charlottetown and Royal Ambulance in Summerside. To date, defibrillation has been successful in cases where the response time is less than four minutes. The remaining ambulance companies cite cases where the patient "arrested in front of us" and even with CPR en route resuscitation was unsuccessful. The need for defibrillators on ambulances in rural P.E.I. cannot be identified or measured since data is not collected nor is it readily accessible. Currently the recording and monitoring of information with regard to ambulance services is inadequate. In order to gather information in the present system, hours must be spent manually counting data from various sources. Documentation is essential for continuity of care, protection against liability, and development of a statistical base for retrospective study.

2.8 Public Awareness

The general public on Prince Edward Island are uninformed regarding emergency services. It was evidenced during the telephone survey carried out on a random sample of the general public that 82.9% of persons surveyed did not know the telephone number of the ambulance in their area. In addition, 91.4% of persons surveyed were unaware of the cost of an ambulance call (See Appendix E). These figures have significance in regard to the public's ability to access emergency services and awareness of their financial responsibility when an ambulance is called.

These results reflect a lack of public education programs that provide information to foster public appreciation while at the same time identifying when and how to access the system. Programs which include geheral information regarding appropriate methods of self help and first aid and the location of first aid training programs in a specific area would be of benefit to all residents.

2.9 Air Ambulance

At present, emergency Medevacs are provided by the Department of National Defence's Air Search and Rescue Service based in Summerside, P.E.I. This squadron is scheduled to be transferred to Greenwood, Nova Scotia in April, 1992. The impact of this relocation is an issue which has received much attention in the media.

P.E.I. is the only province without its own major tertiary care center. 413 Squadron has provided Island residents with an efficient medical evacuation service which has permitted access to all levels of health care. In 1988, 85 of the 152 air evacuations in Atlantic Canada originated from Prince Edward Island. These included 26 children from age one to eighteen years, and 39 infants, 23 of which were less than a week old. Concern has been expressed from various sources regarding the effect of the loss of Air Search and Rescue to Prince Edward Island.

2.10 Non-Emergency Transport

In a retrospective study of ambulance calls for the period of May to August, 1989 inclusive, it was noted that an average of 80.9% of all ambulance calls are classified as non-emergency (see Table 7).

TABLE 7

Regular Ambulance Calls

May - August, 1989

	May	June	July	August
Total Calls:	699.5	536	604	565
Non Emergency Calls:	545.61	434	483	474
Emergency Calls:	153.9	102	121	91
Percentage of Non Emergency Calls: Percentage of the total	78%	81.5%	80%	84%

The ambulance operators refer to these calls as their "bread and butter" as these non-emergency transports provide them with the equity needed to stay in business to attend to the emergency calls as they arise.

In addition to non-emergency transports provided by ambulances, there are also wheelchair and stretcher modes of non-emergency services provided by private companies within the Province. At present, Charlottetown and Summerside each have an operating non-emergency wheelchair transport. In October 1989, a non-emergency stretcher transport was initiated and at present is operating in the greater Charlottetown area. There is a great deal of speculation regarding the impact that this service will have on existing ambulance services, since it is transporting non-emergency stretcher patients at a reduced cost to the user. These non-emergency transport services do not receive subsidization under the present provincial program. Operators of these services see themselves as providing a much needed service to their clients. They propose they could provide an even more cost effective service to the persons they transport if they were able to receive some portion of a subsidy. There are no regulations in existence to determine standards for non-emergency services within the Province. The impact on small rural operations where the number of emergencies a month could be in the single digits, would be critical.

2.11 Wage Costs

The current entry salary for EMA-trained ambulance personnel on Prince Edward Island varies from $4.55 to $6.00 per hour. At present, a group of Island Ambulance personnel have formed a Union and have recently signed a contract. Since wages account for more than half of all expenses incurred by the six ambulance companies, increases in salaries will have a substantial impact on profitability. Ambulance personnel state that low salaries and long working hours result in frustration and low morale among personnel.

The ambulance personnel who were interviewed, report strong feelings regarding their work. As one attendant stated "I love my work but that doesn't put food on the table".

2.12 Delineation of Operation Zones

The issue of operation zones was consistently brought up for discussion in each interview with the ambulance owners. Currently, there exists only "a gentleman's agreement" regarding geographic areas covered by individual ambulance services. In emergency circumstances, it would not be in the best interest of the public to define strict boundaries for each zone. However, the majority of operators believe these boundaries should be adhered to in non-emergency cases, (see Appendix F). Some operators express concern regarding instances of infringement on their area of operation by particular ambulance companies. There are factors which may contribute to the occurrence of these cases:

1. The person arranging for the transport has the right to call the ambulance of his/her choice.

2. Ambulance service efficiency is determined by the image the ambulance personnel project to the public. Personnel who are well groomed and professional and ambulance companies which keep their amblances clean and in good repair are in greater demand than those which do not present themselves in this way (88% of general public responded that the professional appearance of ambulance personnel is important, see Appendix D).

2.13 Telecommunications

In an attempt to provide reliable and effective communications for agencies providing emergency services, Island Tel has introduced the Provincial Integrated Communication System (PICS). PICS is a state of the art, trunked radio communication system which offers Island-wide as well as private (but not secure) communications to its customers. Each agency is assigned to a fleet or subfleet which operates on randomly selected channels under the control of a computer. At present four of the six ambulance companies have purchased equipment which will enable them to access PICS. This system will ensure that emergency service providers have the capability to coordinate rapid response by appropriate agencies when it is required. The result will be improved service effectiveness and manpower efficiencies.

2.14 Alternatives to the Current Program

Although each ambulance company on P.E.I. is subject to subsidization by the Provincial Government, there are instances where financial difficulties exist. These situations are due largely to a decreased call volume. A possible disruption in service where a particular company may go out of business is possible if this situation continues.

A number of possible alternatives have been identified regarding the delivery of emergency services on Prince Edward Island. These alternatives may be considered in the event that a disruption in service were to occur. The following section will outline these options including an analysis of each.

Alternative #1:

This alternative examines the feasibility of a totally Provincially owned and operated ambulance service, similar to the present Ontario and British Columbia systems. The Prince Edward Island Government would own all assets and provide equipment, salaries, and supplies, etc. Under this system, individuals would be employed to manage the Government assets. The ambulance personnel would be public employees, therefore, working standardized hours and being paid standardized wages.

In analyzing the 1988/89 Ambulance Service Budget for the Province of Ontario, it was estimated that this service cost the Ministry of Health $167.7 million. On a per capita basis (9,166,900; Census 1986) this provincial expenditure amounted to approximately $18.30. In British Columbia, the Ambulance Service cost for 1988/89 to the Emergency Health Services Commission is estimated to be $58.6 million. On a per capita basis (2,902,600; Census 1986) the provincial expenditure is approximately $20.20. In Prince Edward Island the per capital expenditure for ambulance services amounts to $6.24 as stated previously. The figures from Ontario and British Columbia suggest that to implement such a system, the P.E.I. government would need to be prepared for a relatively heavy financial burden which would ultimately impact on the tax paying public.

The initial cost of implementing such a system also becomes a major issue. Factors that need to be considered include:

- In order to implement this system the province would have to purchase all existing operations.

- There are presently no standards for ambulance personnel salaries or working hours. Such standards when implemented would increase dramatically the overall operating costs of the program.

- More ambulance personnel would be required to ensure an adequate level of service if a standardized 40 hr. work week was introduced.

Alternative #2:

This alternative would involve a reorganization of the present ambulance system. Under this revised system, the ambulance companies in Summerside and Charlottetown would remain under private ownership, since the volume of calls is large enough in these two areas to support a viable industry. The remaining rural operations would be purchased by the Government and operated out of the local hospital at such a time when the present operators decide to relinquish their operations.

Two identified issues regarding a proposed conversion to hospital run services are budgeting and staffing requirements. An option to be considered in relation to this budget issue is the possibility of transferring of the present subsidization program (including userfee) to the hospital budget (see Table 8). These figures were projected by using information received from Rose Valley Hospital, Shelbourne, N.S. This facility has a hospital based ambulance service in a rural setting which is comparable to the P.E.I. situation. Rose Valley Hospital reports that salaries are 84% of their total budget.

The salary scale used in this table is $11.00 per hour which is comparable to an orderly in the present Collective Agreement.

TABLE 8

Cost Projections for Hospital Based Ambulance Services

(Based on 1988/89 Data)

	Souris	Montague	O'Leary	Alberton
Number of calls	280	900	530	510
Number of Km	14,291	51,890	54,740	54,960
Number of Vehicles	1	2	2	2
Wages and Benefits	194,500	291,700	291,700	291,700
Supplies & Administration	37,000	55,600	55,600	55,600
TOTAL COST	231,500	347,300	347,300	347,300
LESS USERFEE	23,800	76,500	45,050	43,350
TOTAL	207,700	270,780	302,250	303,950
Current Cost to Commission	43,230	110,000	88,500	87,090
Additional total cost for Hospital Based Service	164,500	160,800	214,000	$216,800

In respect to the concern regarding staffing, the ambulance personnel could be incorporated into the hospital system. In addition, any additional personnel required could be registered nurses, who have been trained to the level of an EMA. Since most rural calls are non-emergency transports, these can be booked in advance and the personnel carry pagers for emergency calls that come via the hospital switchboard. Response times would have to be monitored and job descriptions would reflect the unpredictability in the ambulance personnel's schedule.

A pilot project could be considered to test the feasibility of such a venture in one of the rural locations if the need arises.

Alternative #3:

The third alternative is to permit the present system to proceed as it is. In some areas of the Province, the existing service is providing a barely adequate level of service:

1. The response times are variable and differ from area to area,

2. The level of expertise of ambulance personnel is inconsistent across the Province. Not all personnel are EMA trained and those who are have never been retrained.

3. The role of ambulance personnel varies from that of providing transport only to highly motivated responsible efforts.

This alternative does not resolve the long-term potential of a disruption in ambulance services in particular areas of the Province.

Alternative # 4:

The fourth alternative is to give consideration to the contracting of ambulance services, especially in low volume areas which cannot support themselves on the present per call/per mileage subsidization. An existing or alternate ambulance service may agree to provide the required level of service for an annual fee rather than the present subsidization. This would ensure continuity of service areas which may otherwise have interrupted ambulance service in the near future.

Alternative # 5:

The fifth alternative is to develop a provincial ambulance service, which is based out of two locations with satellite services being offered in outlying communities. The financial difficulties presently being experienced in some areas of the Province as a result of low call volumes would have less impact on a larger operation with the volume of calls needed to support a viable business.

3. PRE-HOSPITAL CARE

3.1 Overview

Pre-hospital emergency care is a relatively new concept which ultimately reduces morbidity and mortality resulting from emergency situations occurring outside of the hospital setting. No longer is the focus of health care delivery limited to within the hospital. The provision of emergency care in the pre-hospital setting is crucial in preventing the patient's condition from deteriorating following an untoward incident. The goal of this system is to retrieve, care for and deliver the patient to appropriate medical care in the best condition possible under the circumstances (Health Services Directorate, 1985).

A number of issues related to pre-hospital emergency care were identified and discussed during interviews with various members of the health care sector.

3.2 Accessing the System

Many of those interviewed agreed that there should be in place for the residents of P.E.I. a readily available, reliable, convenient, and rapid means of contacting the system to ensure an effective response by pre-hospital care providers. At present, a working group has been appointed to study and make recommendations regarding the feasibility of introducing a 911 telephone service for Prince Edward Island. This report has been completed and has been submitted to the Minister of Environment for consideration. The general opinion from those involved points to the implementation of a 911 telephone service "in the not too distant future". A 911 number is a Province-wide number

which will enable the person to contact a central dispatch, who will in turn summon the appropriate emergency service providers, whether it be Fire Department, Ambulance, Police/RCMP. Since this number is easy to remember the response times are quicker.

The expertise of the dispatch function is crucial to the operation of the pre-hospital emergency care system. The dispatcher is the primary contact with the public and is responsible for providing a channel for communication between the responding agencies. The majority of those interviewed, preferred regionalized dispatch centers for the Province. as opposed to one central dispatch centre. The reason given for this was that familiarity of the dispatcher for a specific geographic area would enhance and make the system more efficient.

3.3 Communications

At present, all hospitals and ambulance services are being strongly encouraged to buy or lease radios which will enable them to access PICS (Provincial Integrated Communications System). PICS, as described previously, has the capability to permit all First Responders to communicate with each other during an emergency situation.

3.4 Medical Control

Medical input is identified in pre-hospital literature as an essential component in the development of a pre-hospital emergency care system (Health Services Directorate 1985). According to Dauphinee (1989), Medical Control defines the commitment of a group of physicians who understand EMS and are willing to bear medical and legal responsibility for its operation. Medical Control is two tiered and includes Administrative Control (planning, development of policies and procedures, quality control and discipline) and Field Control (protocol development and maintenance of competency of pre-hospital care personnel).

3.5 Patient Categorization

For triage purposes, emergency patients should be divided into categories indicating the severity of illness/injuries to ensure the most seriously ill receive prompt medical attention. On P.E.I., there is a great deal of discussion regarding the role of triage and exactly who should perform this task. The Emergency Measures Organization identifies this area of triage in the pre-hospital setting as an issue which must be addressed and clarified. A categorization and coding system, proposed by Health Services Directorate (1980) is as follows:

Severity Index	Color Code
Presumed Dead	Black
Critical - immediate threat to life or limb.	Red
Urgent - potential threat to life or limb.	Yellow
Non-Urgent - no threat to life or limb.	Green

3.6 Transfer to the Nearest Appropriate Facility

It is recommended in pre-hospital literature that consideration be given to a system which allows pre-hospital transport of critical patients to the nearest appropriate receiving facility. In the rural areas, instances may occur where the "appropriate" hospital may be too distant. Recognizing that such limitations do exist, other strategies should be sought. Nurses and pre-hospital care workers could receive additional training in life support skills which would enable them to act as a team in a coordinated fashion when the circumstances occur. Health care professionals who were interviewed during the course of this study, reported that in an emergency situation, the patient is transferred to the nearest facility then transferred to the location that has the service capability required. On Prince Edward Island, there is no provincial protocol to deal with this issue.

3.7 Education of Personnel

The Canadian Medical Association has established that road ambulance vehicles should be staffed by two personnel, both at the minimum of EMA level. It is recommended that pre-hospital emergency personnel should be Provincially certified and/or licensed and should be re-certified by an educational institution at least every two to three years.

3.8 Legislation

Prince Edward Island has legislation in place which specifically regulates ambulance services in the Province and establishes standards of training for ambulance personnel to provide these services. Legislation in the area of Pre-hospital and Emergency Care should provide a framework to permit future development. According to Dauphinee (1987), legislation should be comprehensive enough so as not to restrict itself to any one component of the EMS. Legislation must allow for:

1. Coordination of services and facilities
2. Establishment of standards
3. Monitoring of performance (includes discipline)
4. Collection of data
5. Long-term planning

3.9 First Responders

Persons referred to as First Responders are trained in BLS to administer a standard of care in the management of emergencies to maintain life until further help arrives at the scene (i.e. EMA personnel). On P.E.I., the Fire Department in Rustico is the only group that is trained to the First Responder level. These firemen respond to every emergency call for this area, they assess the situation, notify appropriate agencies, and administer CPR/First Aid until EMA trained ambulance personnel respond. The present system in Rustico is impressive and consideration should be given for other areas of Prince Edward Island.

4. EMERGENCY UNITS

4.1 Overview

An emergency unit is a facility specifically designed, staffed, and equipped to triage and which provides the appropriate assessment and management for those patients presenting with illness or injury (Health Services Directorate, 1988). An emergency unit functions as a component of the emergency health services system. Each hospital emergency unit has differing capabilities regarding the delivery of emergency services to the community which it serves. These capabilities are determined by taking into consideration geographic location and availability of medical services within the community. The following issues related to the delivery of emergency services in emergency units were discussed during interviews which were held with various emergency services providers.

4.2 Emergency Department vs. Outpatients

Emergency Department personnel have expressed a great deal of concern regarding the utilization of the department for non-emergency services. Retrospective analysis of available Emergency Department data indicates a high volume of patients seek the services of the hospital Emergency Department each year (See Table 9). Data collection methods of the utilization of Emergency Departments are inconsistent among the hospitals so it is impossible to determine with any degree of accuracy what portion of the total visits is urgent, non-urgent, minor procedures, or rechecks. The inpatient numbers represent acutal patients who received treatment in the emergency unit during their hospitalization.

It is estimated by the majority of those interviewed that actual urgent and semi-urgent cases represent less than half of the yearly totals.

In a recent telephone survey of randomly selected emergency unit users, 80% of those surveyed were classified as non-urgent cases (see Appendix C). It is evident that non-urgent patients who use the Emergency Department as a means of entry into the health care system interfere with the Department's capability to deal with true emergency cases as they arise. In an attempt to deal with this situation, many areas in Canada have developed centres for ambulatory care as an alternative approach. These centres/clinics are separately staffed and include all types of non-urgent booked cases which are carried out as an outpatient service. The result is the development of a distinct and separate entity for both the Emergency and Outpatient Departments.

TABLE 9

NUMBER OF EMERGENCY UNIT VISITS

(1987-88 Data)

	Inpatient	Outpatient	Total
Western Hospital	--	7,391	7,391
Community Hospital	--	7,437	7,437
Stewart Memorial Hospital	--	2,334	2,334
Prince County Hospital	272	23,045	23,317
Queen Elizabeth Hospital	239	53,613	53,852
Souris Hospital	--	5,155	5,155
Kings County Hospital	--	18,638	18,638

4.3 Standards and Staff Competency

There is consensus between Emergency Department personnel and emergency unit users regarding the need for additional training and continuing education in the delivery of emergency services. In a questionnaire distributed to all emergency department personnel, 98% of Emergency Department nurses and physicians who responded identified the need for training in such areas as trauma management, patient assessment, and critical care (see Appendix B). Suggestions were received, requesting in-province courses rather than out-of-province to enable more personnel to attend. The issue of maintenance of competency was also identified. It is very difficult for emergency personnel in the smaller hospitals to remain competent due to infrequent use of these skills. The need for "mock codes" and "mock disasters" to practice and maintain these skills was also identified. Similarly, 100% of emergency users indicated that emergency personnel should be trained to deal with trauma and cardiac cases. Minimum emergency room standards are required to ensure that personnel have similar training, and are prepared to deliver similar types of service.

In the questionnaire distributed to Emergency Department personnel, 81.3% of the respondents stated that Emergency Department nurses must be trained in BCLS and BTLS, while 94% of respondents cited ACLS and ATLS as minimum training standards for emergency department physicians. The actual number of personel who have ACLS training is outlined in Table 10

TABLE 10

NUMBER OF PERSONNEL WITH ACLS TRAINING

	Nursing*			Physicians**
	Total	ACLS	% Total	
Alberton	28	0	0	3
O'Leary	15	1	6.7%	
Tyne Valley	10	0	0	3
Summerside	11	0	0	
Charlottetown	23	4	17.4%	
Souris	24	7	29%	3
Montague	8	5	62.5%	

*The above totals of nursing personnel include casual relief staff.

**The number of physicians who have ACLS training is unavailable. All nursing and medical personnel have BCLS.

4.4 Universal Defibrillation Capability

At present there are no standards within the Province of Prince Edward Island regarding defibrillation policies within emergency units. There is a great deal of variance across the Province regarding who initiates defibrillation. There is no agreement among personnel with regard to standards that should be established. There is discrepancy between the emergency nurses in particular with regard to what their role should be. Some are content to wait for the physician or ICU team to arrive to defibrillate while others request to have the function transferred to nursing under specific criteria. The availability of nurses to provide this function should be considered. Larger hospitals would be in a different situation than the smaller community hospitals.

4.5 Categorization of Emergency Departments

The Federal Government's Health Services Directorate (1988) recommends that all emergency units be categorized according to their capability in assessing, stabilizing and where necessary, facilitating the transfer of patients with acute illness and injury. According to this framework, there are four categories to which Emergency Departments may be assigned:

(1) Comprehensive emergency units are located in tertiary care university teaching hospitals or health sciences centres in large communities, and have 24-hour in-unit emergency physician coverage and 24-hour in-house availability of critical care specialty services.

(2) Major emergency units are located in an urban or suburban (teaching or non-teaching) hospitals, and have 24-hour in unit emergency physician coverage and prompt but not necessarily in-house availability of other critical care specialty services. The volume of emergency patients is usually greater than 40,000 per year.

(3) General emergency units are located in suburban or rural hospitals and have 24-hour prompt in-house but not necessarily in-unit emergency physician coverage. Critical care specialty services may not be promptly available. These units have the capacity to resuscitate, stabilize and when necessary facilitate transfer of the critically ill or injured. The volume of emergency patients is usually between 10,000 and 40,000 patients per year.

(4) Basic emergency units include all other <u>active</u> emergency units. They are usually located in smaller, rural hospitals with the emergency physician promptly available but not necessarily in-house. Critical care specialty services are not usually available. These units should have the capacity to resuscitate, stabilize and facilitate transfer of the acutely ill or injured patient. The volume of emergency patients is usually less than 10,000 per year.

There is a need within the province to clarify the roles of the seven emergency departments in relation to:

- In-Hospital physician coverage versus. 24 hr availability
- In unit nursing coverage versus In-house availability
- Levels of educational standards required for emergency unit physicians and nurses
- Triage responsibility and liability.

These identified issues could be addressed by an EMS committee that has members with the expertise to make recommendations regarding these issues.

5. RECOMMENDATIONS

Based on the findings of this report, the following are recommended:

1. That the Hospital and Health Services Commission develop a Provincial Emergency Medical Services (EMSS) Advisory Committee comprised of representation from the Hospital and Health Services Commission, P.E.I. Medical Society, P.E.I. Ambulance Association, P.E.I. Hospital Association, Emergency Cardiac Care Committee, Holland College (EMA educator), a representative of Emergency Department nurses and the general public. The mandate of this Committee is to make recommendation to the Commission regarding:

   - development of an Emergency Medical Services Act which encompasses all aspects of pre-hospital emergency care.

   - establishment of a policy regarding the minimum qualification for licensure for Ambulance Personnel on P.E.I.

   - establishment of a policy regarding retraining on an every two year basis as a requirement for licensure for an Emergency Medical Attendant (EMA) on P.E.I.

   - establishment of accessible mandatory inservice and skill maintenance programs as a requirement for licensure for Emergency Medical Attendant (EMA).

- development of a standard patient categorization and coding system for use by provincial pre-hospital and emergency care providers.

- development of provincial minimum standards for all emergency care personnel including a mechanism for evaluation.

- the feasibility of categorizing Provincial Emergency Departments according to their capabilities and level of service provided.

- the need for establishment of a provincial protocol for Emergency Department defibrillation.

- the feasibility of establishing Ambulatory Care Clinics for Prince Edward Island.

- development of Public Awareness Programs to educate the Public regarding how and when to access emergency services.

- providing support to the Department of the Environment regarding the development of a 911 service for emergency access throughout the Province.

2. That P.E.I. Hospital and Health Services Commission give consideration to:

- the establishment of a standard maximum user fee for both in-Province and out-of-Province ambulance

transportation for cases where appropriate medical treatment is unavailable at the present location.

- the submission of audited year-end financial statements by the ambulance companies to the Commission.

3. That the P.E.I. Hospital and Health Services Commission employee designated as responsible for the P.E.I. Ambulance Program:

- act as a resource person to the EMS Committee.

- initiate plans for the implementation of a universal Information System for the recording of emergency services data.

- revise the present Ambulance Dispatch Record forms to reflect appropriate patient assessment and intervention by ambulance personnel.

6. CONCLUSION

The Pre-Hospital and Emergency Services' Study has identified issues related to the delivery of pre-hospital and emergency care. The importance of each of these issues may vary from one area to another within the Province. These issues should be addressed for the Province as a whole and for each area according to its needs. A systems approach would ensure that no specific area is left in isolation to meet the needs of a seriously ill person in an emergency. Many of the existing services within the Province are functioning adequately at present. Integration is needed to ensure that a coordinated response is provided.

There is much work that can be done in areas of legislation, identification of guidelines, and the development of specific standards to ensure that integration of existing services is achieved.

This study was a starting point for the development of an EMS structure for Prince Edward Island. This approach should be on-going to ensure the continuance of efficient and effective pre-hospital emergency care delivery system for the residents of Prince Edward Island.

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APPENDIX A

The following people were interviewed either in person or by phone:

Arsenault, Joe; Emergency Measures Organization
Avery, Bud; EMA-P, Holland College, Charlottetown
Bernard, Albert; Administrator, Western Hospital, Alberton
Camp, Bill, Director of Finance, Rose Valley Hospital, Shelbourne, N.S.
Carew, Wayne; Administrator, Prince County Hospital, Summerside
Classen, Barrie; Royal Ambulance
Coles, Margaret Ann; Risk Manager Coordinator, Queen Elizabeth Hospital
Conrad, Dick; Director Emergency Health Services, St. John's Newfoundland
Cox, Janet; St. John Ambulance
Crockett, Charlie; St. John Ambulance
Dingwell, Gary; Dingwell's Ambulance, Souris
Ferguson, Doug; Ferguson's Ambulance, O'Leary
Fraser, Charlie & Ruth; Fraser's Ambulance, Montague
Francoeur, Barbara; Director Patient Services, Prince County Hospital, Summerside
Gallant, Arlene; Head Nurse Outpatients, Community Hospital, O'Leary
Gordon, Sandra; Head Nurse Outpatients, Kings County Memorial, Montague
Gorrill, Doris; Director of Nursing, Stewart Memorial, Tyne Valley
Jones, Karen; Heart and Stroke Foundation, Charlottetown, P.E.I.
Lawlor, Roseanne; Acting Administrator, Souris Hospital
Lord, Shirley; Head Nurse Emergency , Prince County Hospital
Losier, Dr. Arthur; Emergency Department Director, Queen Elizabeth Hospital

Lowther, Marilyn; Executive Director, P.E.I. Medical Society

Lutes, Joan; Coordinator Ambulance Services, Moncton City Hospital

MacDonald, Neil; Neil's Ambulance, Charlottetown

MacFadden, Helene; Director of Nursing, Kings County Memorial, Montague

MacIntyre, Wanita; Administrator Community Hospital, O'Leary

MacKay, Carolyn; Ambulance Services, New Brunswick

MacKenzie, Dr.David, G.P., Polyclinic, Charlottetown

MacLeod, Thelma; Head Nurse, Kings County Memorial, Montague

Miller, Robert; Administrator, Stewart Memorial, Tyne Valley

McGuire, Mary; Head Nurse, Stewart Memorial, Tyne Valley

Morgan, Randall & Moore Alan; CARE-A-VAN

Peterson, Tony; Director of Ambulance Services, Nova Scotia

Perry, Arlene; Acting Head Nurse Outpatients, Western Hospital, Alberton

Perry, Greg; Royal Ambulance, Summerside

Poirier, Sylvia; Emergency Cardiac Care Committee

Pratt, Halbert; Red Cross, Charlottetown, P.E.I.

Prince County Hospital; Head Nurses (Monthly Meeting)

Quecke, Horst; Administrator, Kings County Memorial Hospital,

Queen Elizabeth Hospital; Head Nurses (Monthly Meeting)

Rackham, Brenda; Head Nurse Emergency, Queen Elizabeth Hospital

Rennie, Eva; Director of Nursing, Western Hospital, Alberton

Rogers, Pat; Pat and the Elephant

Smith, David; Rooney's Ambulance, Alberton

APPENDIX B

Emergency Department Personnel Questionnaire

1. Which hospital Emergency Department do you work in?

A.	Western Hospital	10.9%
B.	Community Hospital	23.4%
C.	Stewart Memorial Hospital	1.5%
D.	Prince County Hospital	12.5%
E.	Queen Elizabeth Hospital	18.8%
F.	Souris Hospital	26.6%
G.	Kings County Hospital	6.3%

2. What is your role in the Emergency Department?

A.	Staff Nurse	87.5%
B.	General Practitioner	12.5%
C.	Medical Specialist	0
D.	Other (specify)	0

3. Please indicate the level of training that <u>you</u> believe should be minimal requirements to work in an Emergency Department.

A.	Emergency Department Physician:	BCLS,	BTLS,	ACLS,	ATLS,
		6%	6%	94%	94%
B.	Emergency Department Nurse:	BCLS,	BTLS,	ACLS,	ATLS
		81.3%	81.3%	18.7%	18.7%

4. What in-service programs are available in your hospital for emergency physicians and nurses?

None	12.5%
CPR/BCLS	78%
Basic Coronary Care Course	74%
Critical Care Instructor	18%

5. Please identify any major concerns regarding the delivery of emergency services by the Department or hospital where you work.

Increased numbers of non-emergency patients	31%
Staffing inadequate in E.D.	36%
Ambulance Attendants need more training	13%
Poorly developed ambulatory care	14%
Air Ambulance	6%

APPENDIX C

Emergency Department Users

1. When did you **LAST** use the services in an Emergency/OP Department? N=70

A.	Less than one month	35.7%
B.	1-3 months	44.3%
C.	4-6 months	14.3%
D.	7-12 months	5.7%

2. How often have you used Emergency Department Services during the past year?

A.	Once	20 %
B.	Twice	25.8%
C.	Three times	12.8%
D.	Four or more times	41.4%

3. For what reason did you use the Emergency Department? Specify.

Urgent	20 %
Non-Urgent	80 %

4. How would you rate the overall service that you received?

A	B	C	D
VERY GOOD	GOOD	FAIR	POOR
48%	28%	18%	6%

5. In your opinion, what services should be available in the Emergency Department?

A.	A doctor 24 hours a day	34.3%
B.	A nurse 24 hours a day	34.3%
C.	A doctor only as needed	65.7%
D.	A nurse only as needed	65.7%
E.	Ability to monitor and treat heart attack victims	100 %
F.	Ability to treat accident victims	100 %
G.	Medical specialists	28.6%

6. How old are you?

A.	18-25 years	31.4%
B.	26-45 years	22.8%
C.	46-65 years	20 %
D.	Over 65 years	25.8%

7. Sex

A.	Male	64.3%
B.	Female	35.7%

APPENDIX D

Ambulance Service Users

N = 60

1. When did you **LAST** use the services of an Ambulance?

A.	Less than one month	38%
B.	2-3 months	40%
C.	4-6 months	18%
D.	7-12 months	4%

2. How often have you used Ambulance Services during the past year?

A.	Once	75%
B.	Twice	16.6%
C.	Three times	5%
D.	Four or more times	3.4%

3. Which ambulance company did you use?

16% used each ambulance company

4. For what reasons did you need an ambulance?

Urgent	41.7%
Non-Urgent	58.3%

5. How would you rate the overall service that you received?

A.	Very Good	28.3%
B.	Good	60.0%
C.	Fair	6.7%
D.	Poor	5.0%

6. In your opinion, what level of training would you expect ambulance attendants to have?

A.	Specialized Emergency training (ACLS, EMA)	73.3%
B.	Trained to the level of a Doctor	0
C.	Trained to the level of a nurse	0
D.	First-aid training only	26.7%
E.	CPR only	0
F.	Professionalism	88%

7. Do you have any additional comments on ambulance services?

Cost	75%
Don't mind paying	5%
Insurance	20%

8. How old are you?

A.	18-25 years	10%
B.	26-45 years	46.7%
C.	46-65 years	26.7%
D.	Over 65 years	16.6%

9. Sex

A.	Male	46%
B.	Female	54%

APPENDIX E

EMERGENCY MEDICAL SERVICES

RANDOM GENERAL PUBLIC

N = 70

This is to find out how you would call for help in an emergency situation.

1. What is the telephone number of the Ambulance in your area?

A.	Number known (specify)	17.1%
B.	Number not known	82.9%

2. If "A", how do you know this number?

A.	Number memorized	1
B.	Number posted by telephone	14.3%
C.	Telephone book	1
D.	Other	

3. What is the telephone number of the Emergency Department in your area?

A.	Number known (specify)	25.7%
B.	Number not known	74.3%

4. If "A", how do you know this number?

A.	Number memorized	0
B.	Number posted by telephone	11.4%
C.	Telephone book	14.3%
D.	Other	

5. In each of the following situations, how would you obtain help if they occurred in your home during the day.

	Ambulance	Dr.	Hospital	Other	Specify
Fracture of arm	12.9%	14.3%	68.6%	4.2%	
A cut on the leg requiring stitches	7.1%	10%	78.6%	4.2%	
A child swallows cleaning liquid	1.4%	17.1%	78.6%	2.9%	
strong chest pain	37.1%	12.9%	50%	0	

6. What is the approximate cost to you for a trip in the ambulance?

A. Did know ($90) 8.6%
B. Did not know 91.4%

COMMENTS:

A. User should not pay at all 8%
B. User should pay a percentage of the cost 89%
C. User should pay the entire cost his/her self 3%

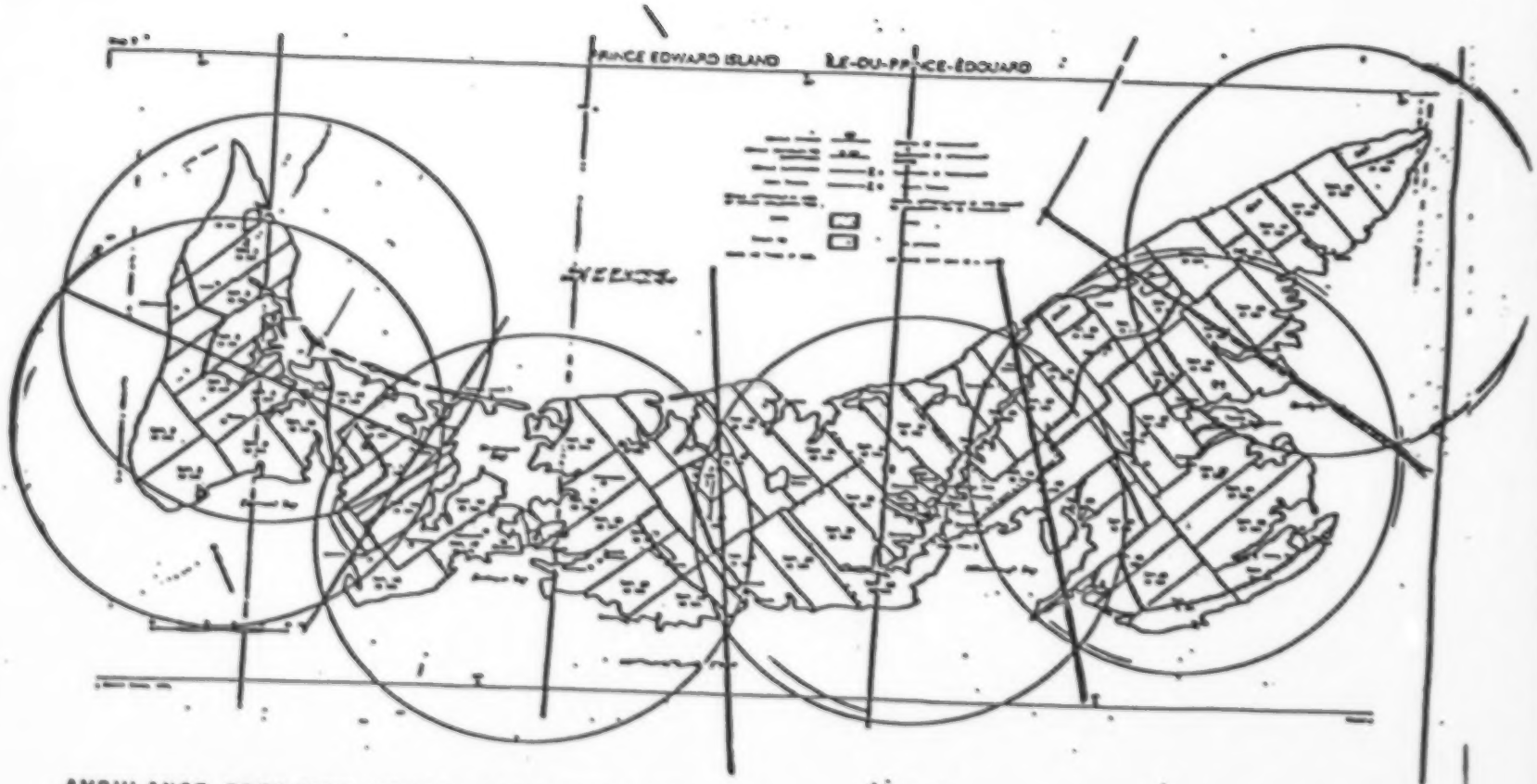
7. What is your age?

A.	18-25	10%
B.	26-45	38.6%
C.	46-65	31.4%
D.	Over 65	21%

8. Sex

A.	Male	48.6%
B.	Female	51.4%

APPENDIX F



AMBULANCE OPERATOR ZONES USING A 25 MILE RADIUS